CMS & Virtualisation

Dave Evans & Andrew Melo

CMS Approach to VMs

- We are really busy with other stuff like data
  - We are really low on manpower
- Interesting project we would like to spend more time on
- Deployed a Grad Student...

Here's some $, run some stuff on EC2

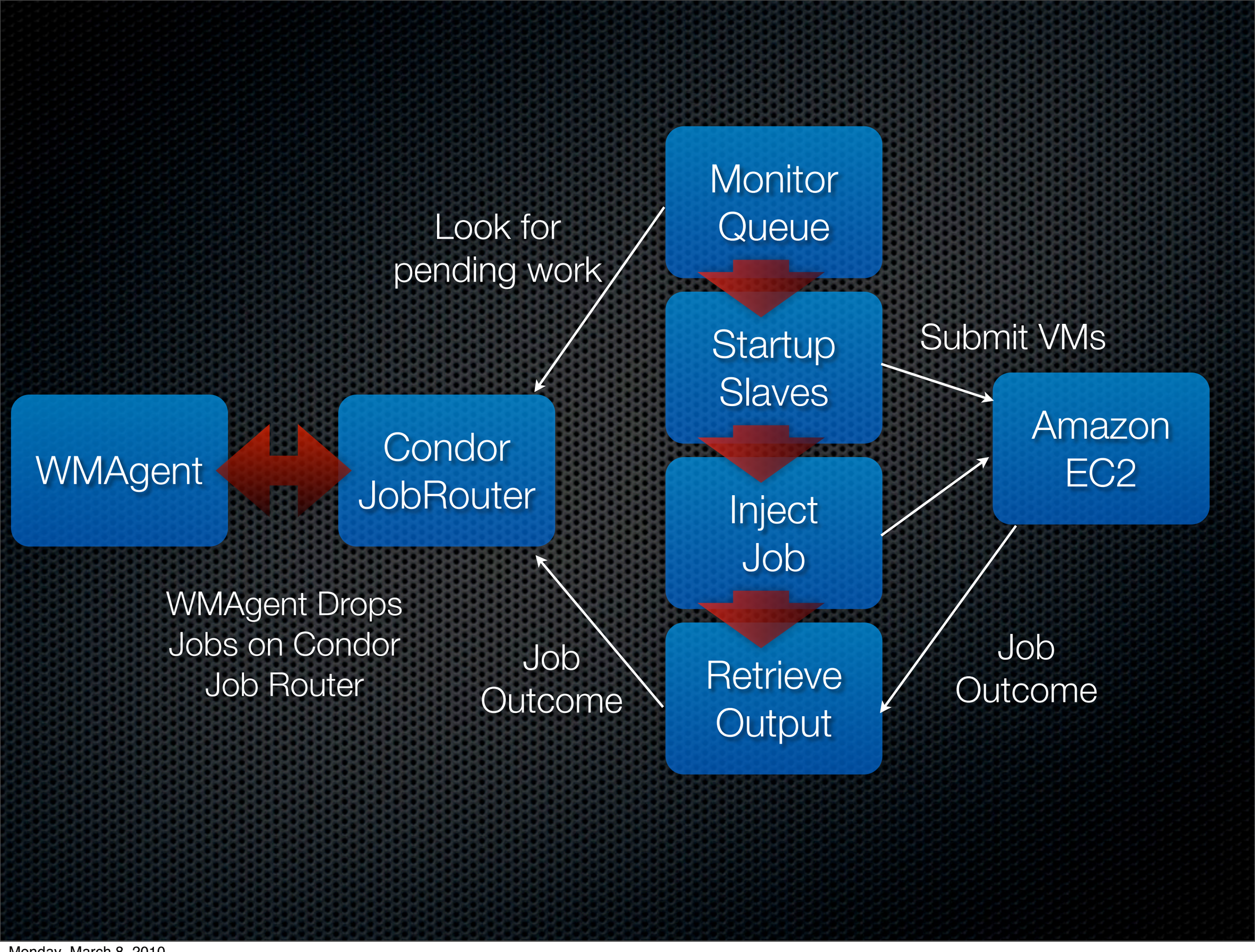
What kinda stuff?

CMS stuff

Game On!

Prototype

- WMAgent submits jobs to a condor master
- Using condor_job_router and hawkeye, watch the condor master & trigger EC2 slave submissions
- Connect to the slave via ssh and bootstrap a condor slave
- Funnel in the CMS job & execute it


Monitor Queue
Look for pending work
Startup Slaves
Submit VMs
WMAgent
Condor JobRouter
Inject Job
Amazon EC2
WMAgent Drops Jobs on Condor Job Router
Job Outcome
Retrieve Output
Job Outcome

Progress

- Considering this only for MC production jobs at present
  - Requires no input, easy to control output
- Using CERN VM so far
  - Bottleneck: SL5 problems mean no recent CMSSW releases available
- Work to continue in the next few months at Vanderbilt

CMS Usage of VMs

- Initially, we expect to use VM images to distribute CMS Workload Management server (WMAgent) instances
  - Preinstalled & configured services and libraries
    - Reduce impact of system differences
    - Reduce Support load for installation and setup
- Also extend this to PhEDEx Data Transfer agents and web service platforms.

VM for Services

- Have done some initial tests with CernVM and VMWare images
- Promising signs... possibly because CMS build system isnt the greatest thing for Computing Tools
- Could make it easy to load balance between job servers
  - Run servers on cloud, spawn more to cope with increased loads

Cloud Usage (Blue Sky)

- Expand the idea of a Pilot system or Task Queue
  - Swarms of VM nodes into a site
    - Nodes interact and adopt useful roles as required by processing
    - Form Cooperative Hives of nodes:
      - Workers, Catalogs, Storage Interfaces, Job Managers

Conclusions

- Some promising stuff out there
- Would like to get CMS more involved
  - Effort bound
- Still really in prototype & hobby stages for CMS